11-5-2020

# ORSP NSF EPSCoR RII Track-2 Information Session: Industries of the Future

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# The University of Mississippi


## NSF EPSCoR Track-2

ORSP INFORMATION SESSION

NOV 2,5, 2020

ZOOM

# What is EPSCoR

The Established Program to Stimulate Competitive Research (EPSCoR) helps NSF to **promote scientific progress nationwide**.

A jurisdiction (state, commonwealth, or territory) is EPSCoR eligible if their most recent 5-year level of total NSF funding <= 0.75% of the total NSF budget.

https://www.nsf.gov/od/oia/programs/epscor/Eligibility_Tables/FY2021_Eligibility.pdf

Purpose: To build sustainable capacity of educational institutions in those states to compete more successfully in NSF and other research programs.

# EPSCoR Strategic Goals

- Catalyze research capability across and among jurisdictions.
- Establish STEM professional development pathways.
- Broaden participation of diverse groups/institutions in STEM
- Effect engagement in STEM at national and global levels
- Impact jurisdictional Economic Development

# Research Infrastructure Improvement (RII)

- **RII Track-1**: Statewide Partnerships
- **RII Track-2 FEC** Focused EPSCoR Collaborations: builds **inter-jurisdictional** collaborative teams of EPSCoR investigators in scientific focus areas consistent with NSF priorities
  - 4 year awards
  - $1M/year (for 2 jurisdictional proposals)
  - $1.5M/year for 3+juristictional proposals)
- **RII Track-3: Building Diverse Communities**
  Last solicitation was in 2013, led to creation of NSF INCLUDES
- **Track 4**: EPSCoR Research Fellows

# EPSCoR RII Track-2

- Builds **inter-jurisdictional collaborative teams** in specific scientific focus areas
- Combines expertise distributed in different EPSCoR jurisdictions into a “critical mass” capable of productive research and activities in the focus area
  - Provides “startup funding” for “virtual centers”
- Exemplifies diversity at multiple levels
- Develops diverse early-career faculty
- Promotes balanced, sustainable collaborations

# Eligibility

- Mississippi is an EPSCoR Jurisdiction.
- **Each institution** in an EPSCoR jurisdiction can submit **one proposal as the lead**
  (no limit to # of non-lead institutional participations)
- Each proposal may have **one PI** and up to **4 co-PIs**
- Each collaborating jurisdiction will have at least one co-PI
- PIs and co-PIs on current Track-2 awards with end dates later than 10/31/2021 are **not eligible** to submit as (co)PI
- Faculty can be listed as (co)PI on at most one proposal
- Can have multiple other senior personnel (not co-PIs)

# NSF Track 2 Webinar

The FY 2021 RII Track-2 solicitation has been released (NSF 21-518). There will be two informational webinars for those interested in applying for this program: Webinar 1 has passed.

Webinar 2 will be on Wednesday, November 4th at 1pm EST (Meeting ID: 160 166 6236, Passcode: 595891).

# NSF EPSCoR Track-2 Page

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505263

NSF-wide

## EPSCoR Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (RII Track-2 FEC) N

**CONTACTS**

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**PROGRAM GUIDELINES**

Solicitation 21-518

**Important Information for Proposers**

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 20-1), is effective for proposals

Read and study the full solicitation.

Read titles and abstracts of recently funded Track 2 awards.

# NSF Merit Review Criteria

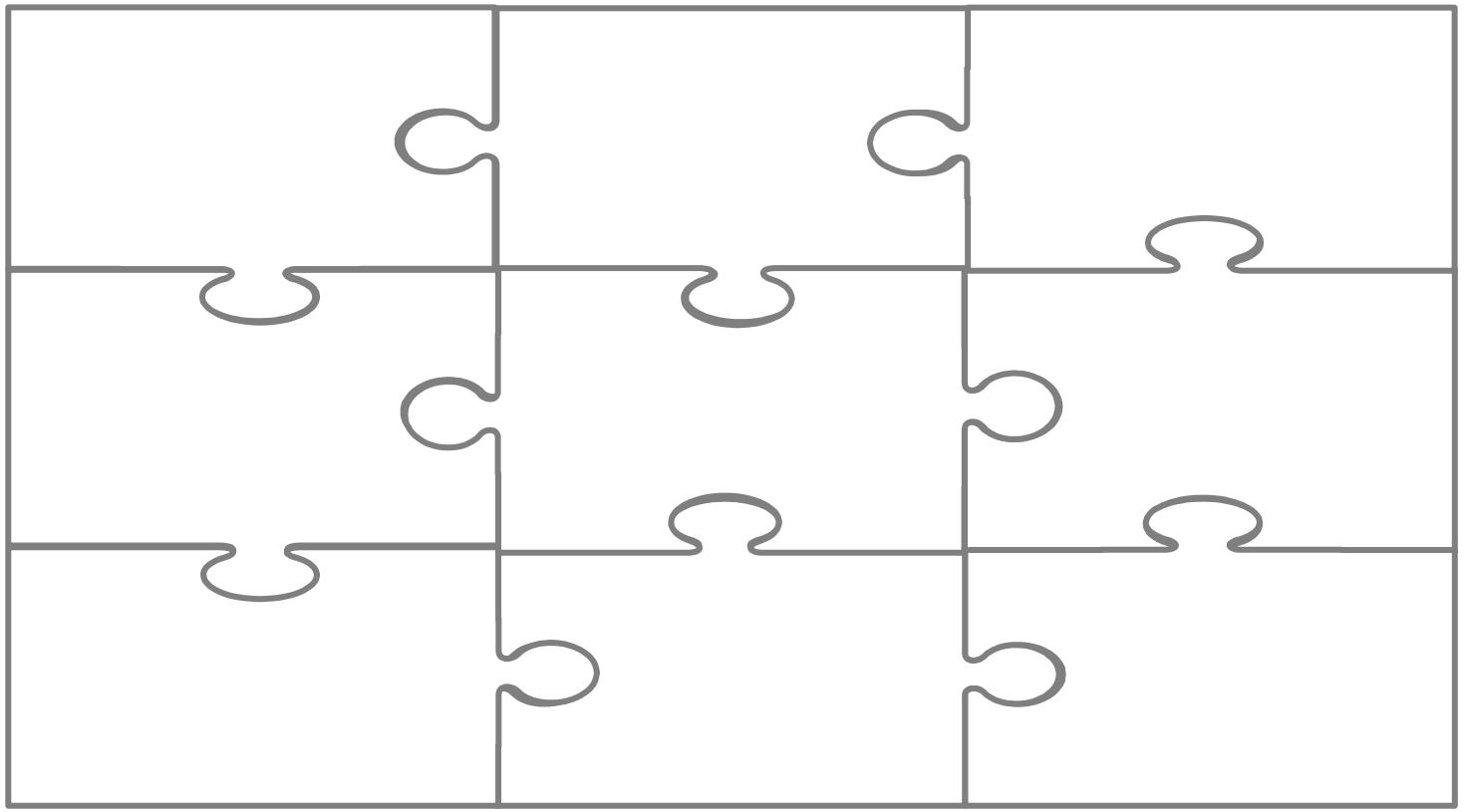
- Standard NSF (see pages 11-12 of solicitation)
  - Intellectual Merit
  - Broader Impacts

← All NSF funding ops.

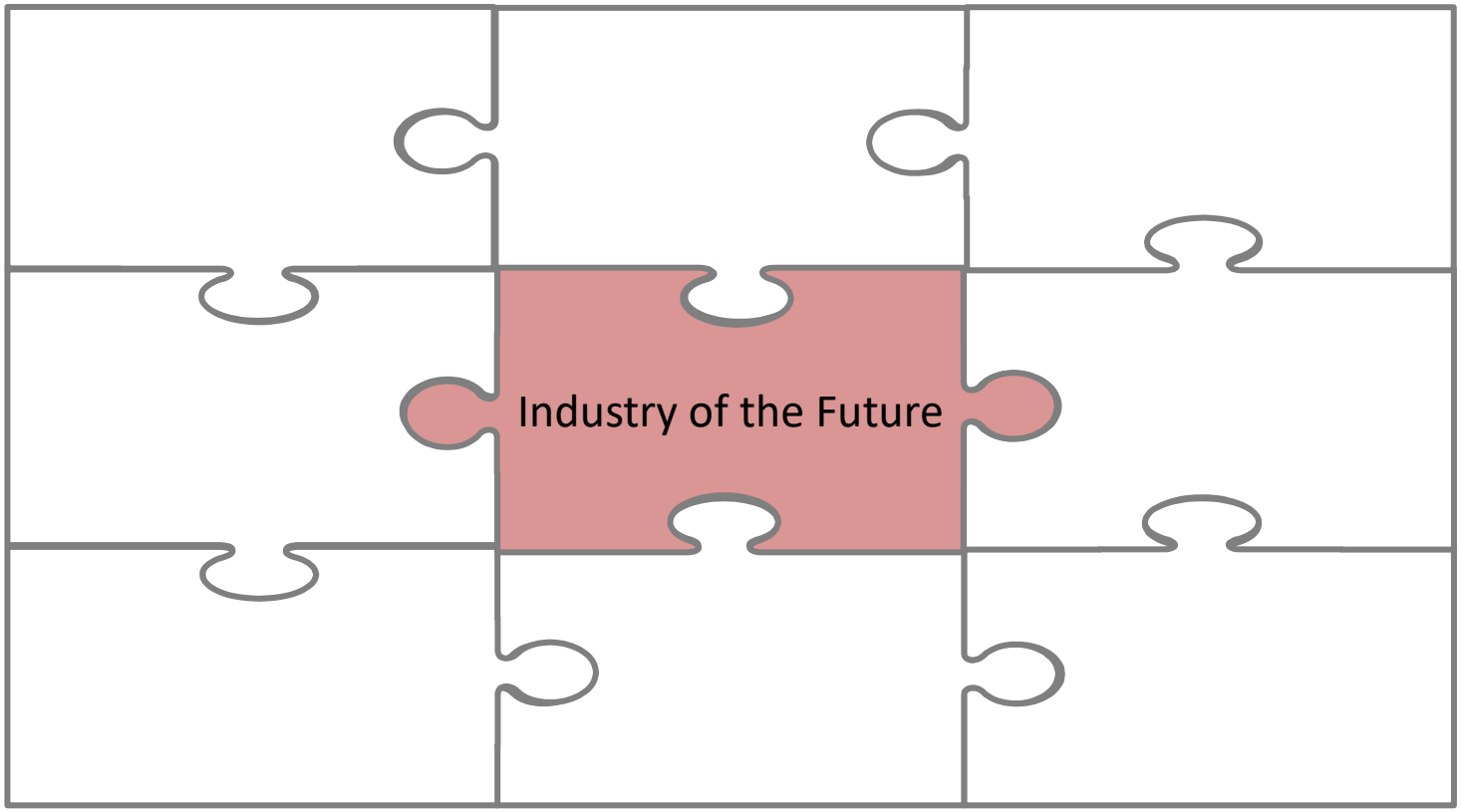
- EPSCoR Track-2 Specific (see page 12)
  - Responsiveness to programmatic Focus Area (Industries of the Future)
  - Research Capacity
  - Interjurisdictional Collaboration
  - Workforce Development
  - Jurisdictional Impacts
  - Integration of Project Elements

← Track 2 in particular

# Piecing Together a Proposal



# Industry of the Future



# Choose an Industry of the Future

For the National Science Foundation, **Industries of the Future** have been defined across several categories:

**Advanced Manufacturing**

**Advanced Wireless**

**Artificial Intelligence**

**Biotechnology**

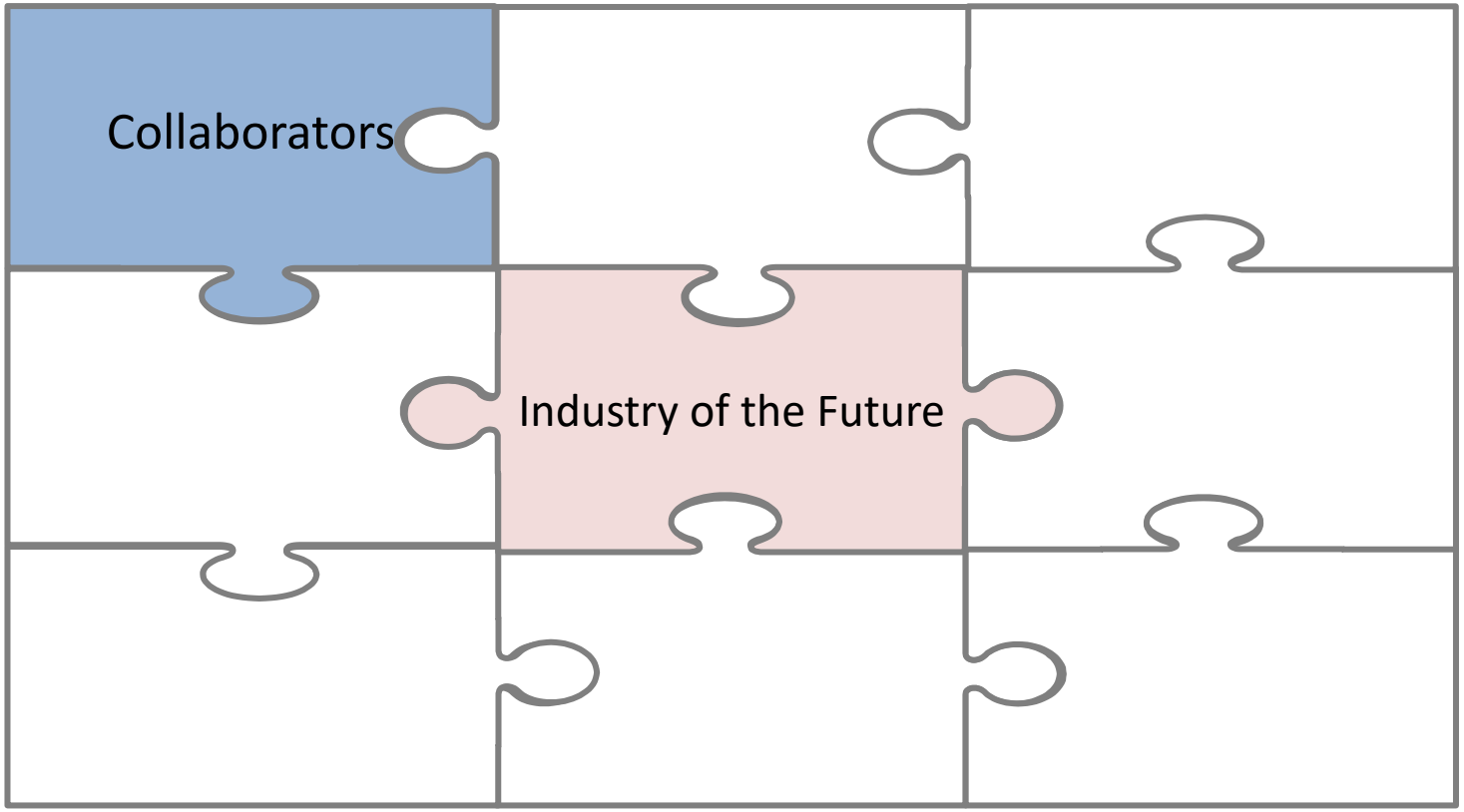
**Quantum Information Science**

**Spectrum Innovation Science**

Which **Industry of the Future** will you advance by developing collaborative interjurisdictional research and education infrastructure? Can be **MULTIPLE** industries.

Should be one(s) we can demonstrate prior success/ outcomes from federal investments that we can build on here.

# Collaborators

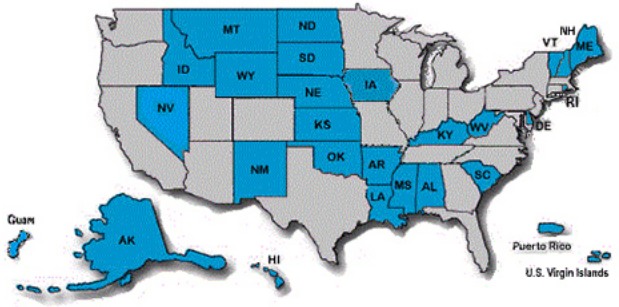


# Collaborators

Who will you collaborate with to advance chosen industry?

**Up to 4 co-Investigators**

**At least one institution in at least one other ESPCoR state.**




| | | |
|---|---|---|
| Alabama | Alaska | Arkansas |
| Delaware | Guam | Hawaii |
| Idaho | Iowa | Kansas |
| Kentucky | Louisiana | Maine |
| Mississippi | Montana | Nebraska |
| Nevada | New Hampshire | New Mexico |
| North Dakota | Oklahoma | Puerto Rico |
| Rhode Island | South Carolina | South Dakota |
| U.S. Virgin Islands | Vermont | West Virginia |
| Wyoming | | |

# Collaborators

- Several researchers and jurisdictions w/ prior **documented outcomes in a particular Industry of the Future**
- Address challenges neither could address as well alone
- Identify roles/contributions of each partner
- ID expected gains in research capacity & competitiveness
- Must be **balanced**, with each contributing and benefitting at levels that are appropriate to their capabilities.
- Involving **2- and 4-year colleges**, **Primarily Under-graduate** & **Minority Serving Institutions** recommended.
- Identify **each faculty-level investigator** and clearly document the **expected contribution** of each

# Collaborators

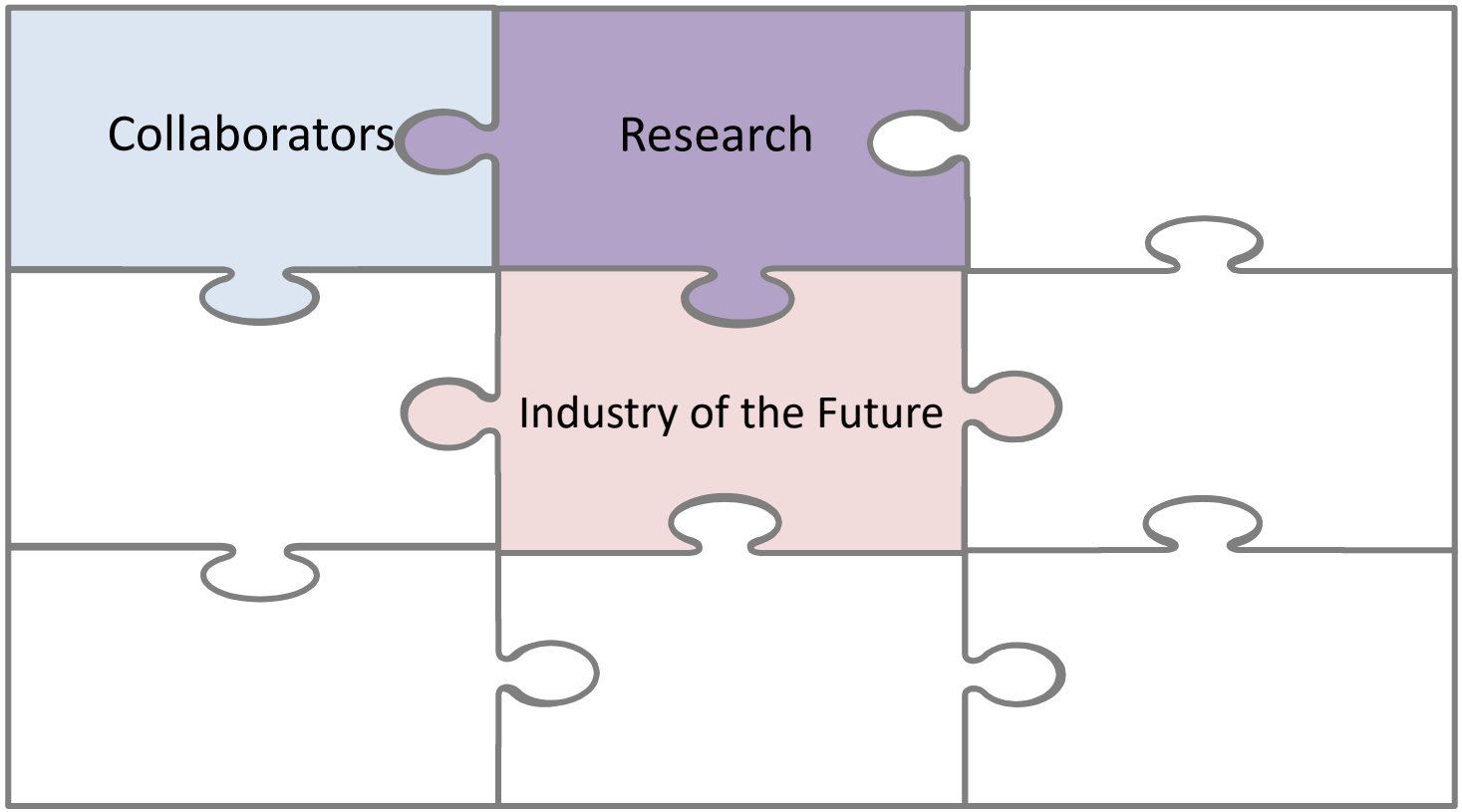
## Resources for Identifying Collaborators

- PIVOT: https://pivot.proquest.com/
  Contact Jason Hale for assistance or training

- Research Insight: http://research.olemiss.edu/ResearchInsight
  Those submitting NOIs will be offered support or access.

- ORSP Networking Session 11/13, 1pm – sign up here ->
  http://research.olemiss.edu/upcoming-presentations

# Research



# Research

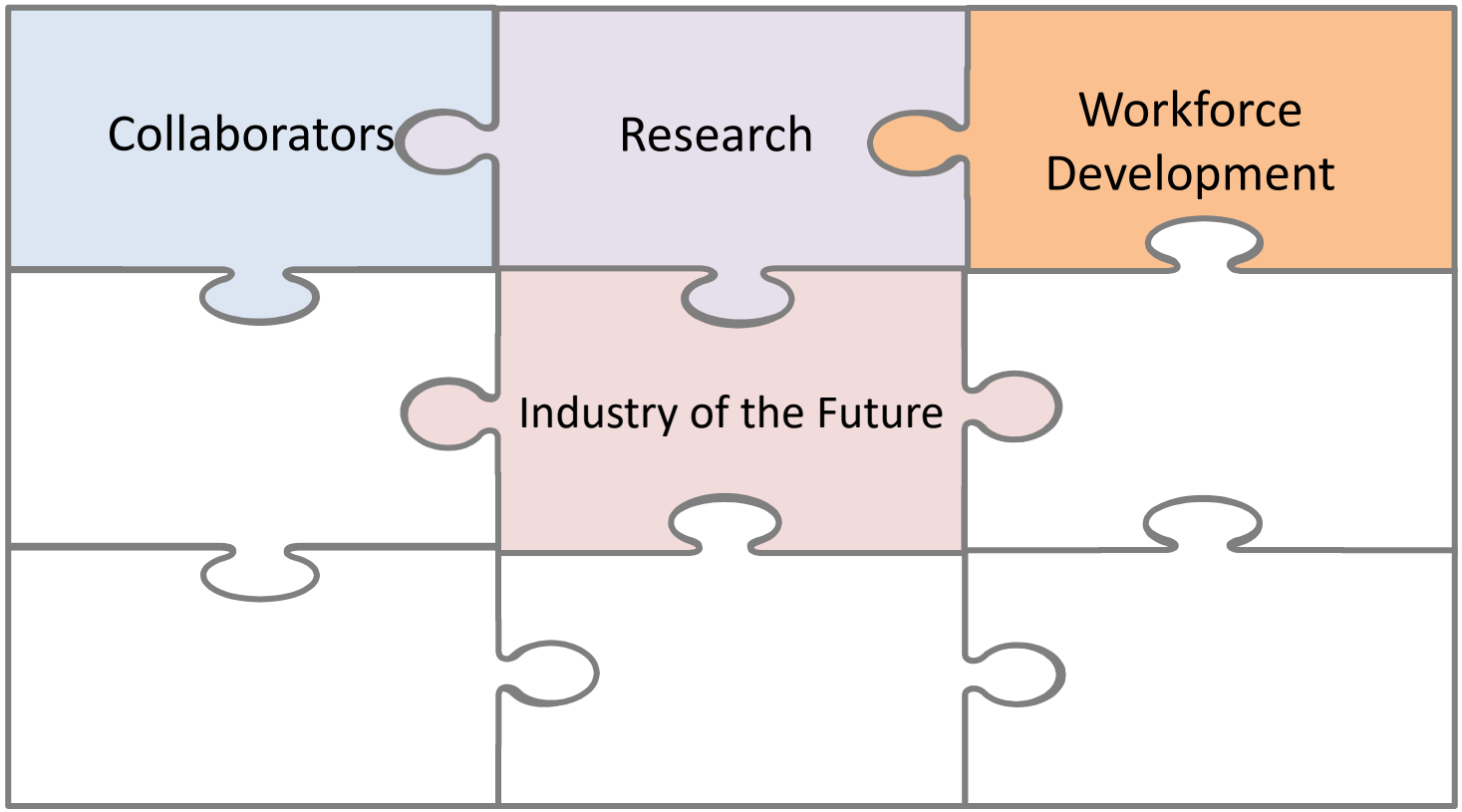
- In which **underlying prior research focus** area(s) will team build further capacity to advance chosen industry?
- The industries of the future will need **new ways** to influence the economy, workforce, and society
- Must be STEM or STEM Ed areas that NSF supports https://www.nsf.gov/about/research_areas.jsp
- Should build on outcomes from **previous investments** by NSF and other federal agencies (show intellectual merit outcomes and broader impacts)

# Research

The solicitation mentions the following activities in particular that are needed to advance future industries.

- artificial intelligence and machine learning
- cyber infrastructure
- mathematical and computational modeling
- dynamics and control methodologies,
- integrating systems biology, synthetic biology & bioprocessing
- influencing the economy, workforce, and society

# Workforce Development



# Workforce Development

- **Develop strong, innovative educational pathways to prepare diverse workforce for chosen industry**
- Pipeline of **highly skilled** students and postdocs that can excel in **focus area**, **navigate disciplinary and sector boundaries**, **communicate with the general public**, and **succeed in careers in any sector** in the chosen industry
- What anticipated workforce **needs of the target industry**?
  - Provide **baseline workforce data**
  - Identify workforce development **goals and outcomes**
- **Engage local & state industry** in workforce development

# Workforce Development

- Must include early career faculty
- Can incl. K-12, 2-yr colleges, undergrad & grad students
- Must address diversity of workforce
- Other workers
  - Preparing **Future PhDs**
  - **non-PhD workers for chosen industry**

# Workforce Development

## UM Resources for Training & Education Plans

- Office of Pre-College Programs
  - Ellen Shelton or Wendy Pfrenger
  - Summer Programs for High School students (residential and online)
  - Camps and Academic Competitions
  - More…
  - http://www.outreach.olemiss.edu/pre_college/index.html
- Center for Manufacturing Excellence
  - Scott Kilpatrick
  - https://cme.olemiss.edu/

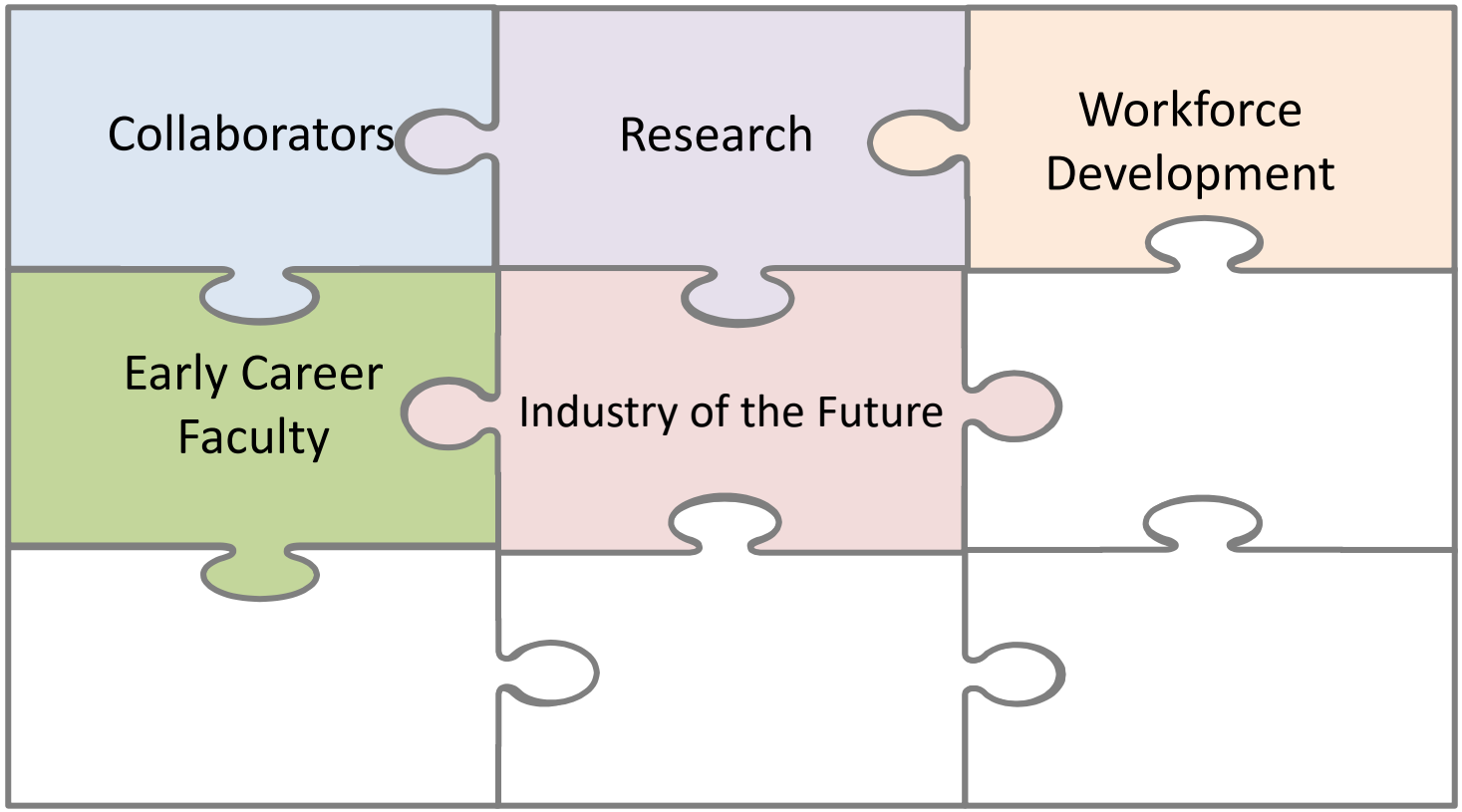
# Workforce Development

## UM Resources for Training & Education Plans

- Center for Mathematics and Science Education
  - Alice Steimle
  - https://cmse.olemiss.edu/
  - Professional Development to MS math and science teachers
  - K-12 STEM outreach programs
- Academic Innovations Group
  - https://news.olemiss.edu/um-creates-one-stop-academic-innovations-unit/
  - https://news.olemiss.edu/um-hires-new-faculty-development-director
  - https://cetl.olemiss.edu/

**?? What other resources for developing training & education plans for Track 2 ??**

# Early Career Faculty



# Early Career Faculty

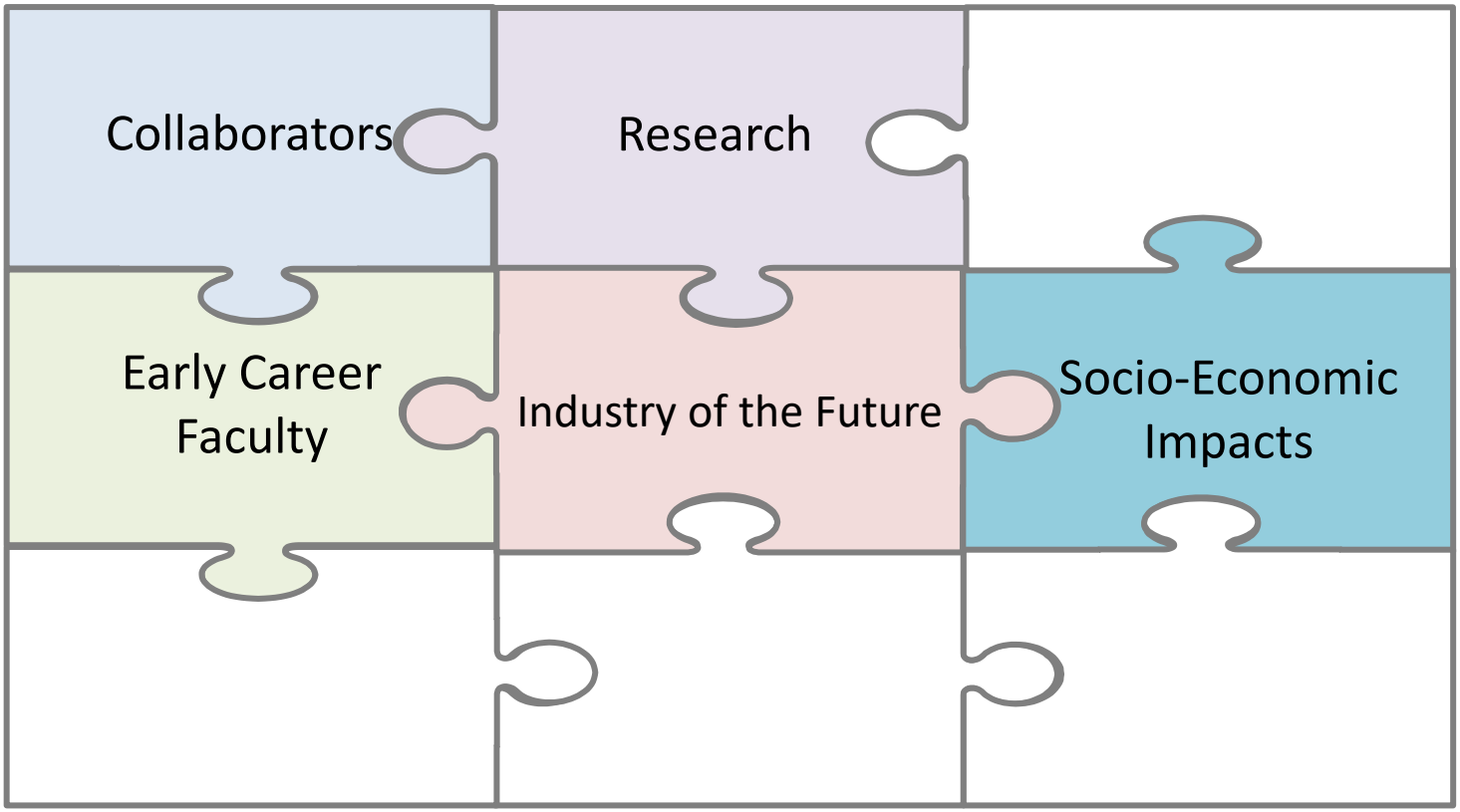
- Early-career faculty must be involved and mentored
  - **Early Career Faculty** should be a key part of this proposal, either as ***named investigators***, or as ***to-be-hired contributors*** to focus area
  - **Senior faculty** should therefore be involved in this mentoring, either as investigators, or on advisory boards, or in other/innovative ways

- Defined as **assistant professors** in **tenure track** (or equivalent) positions, or **research assistant professors:**
  - at the **time of submission** of the proposal, **OR**
  - **who are hired in to such a position** during the award.
    - You **can** propose using some award funds to recruit, hire, & provide start-up or initial salary support for new faculty who can contribute to chosen industry

- Must emphasize recruitment, dev., and/or retraining

- Progression of early career faculty is an assessment factor

# Socio-Economic Impacts



# Socio-Economic Impacts

- Create a pathway for economic-scale impact within jurisdiction, guided by a diverse STEM workforce
- Delineate expected impacts on industry & jurisdiction(s) & how they will tie into the jurisdictions' econ. development
- Clear identification of how the proposed research will be linked and implemented into the jurisdiction(s) economy.
- How will advance innovation, tech. transf., commercialization?
- MIGHT also advance understanding social & political impacts of this tech/industry on the environment or current social-economic demographic present in the jurisdiction
- TEAM SHOULD HAVE SOMEONE ON IT WHO CAN ADDRESS ECOMONMIC, SOCI-ECONOMIC, or SOCIO-POLITICAL IMPACTS – a social science researcher or economist, in other words.

# Socio-Economic Impact

## UM Resources for Developing Socio-Economic Impacts

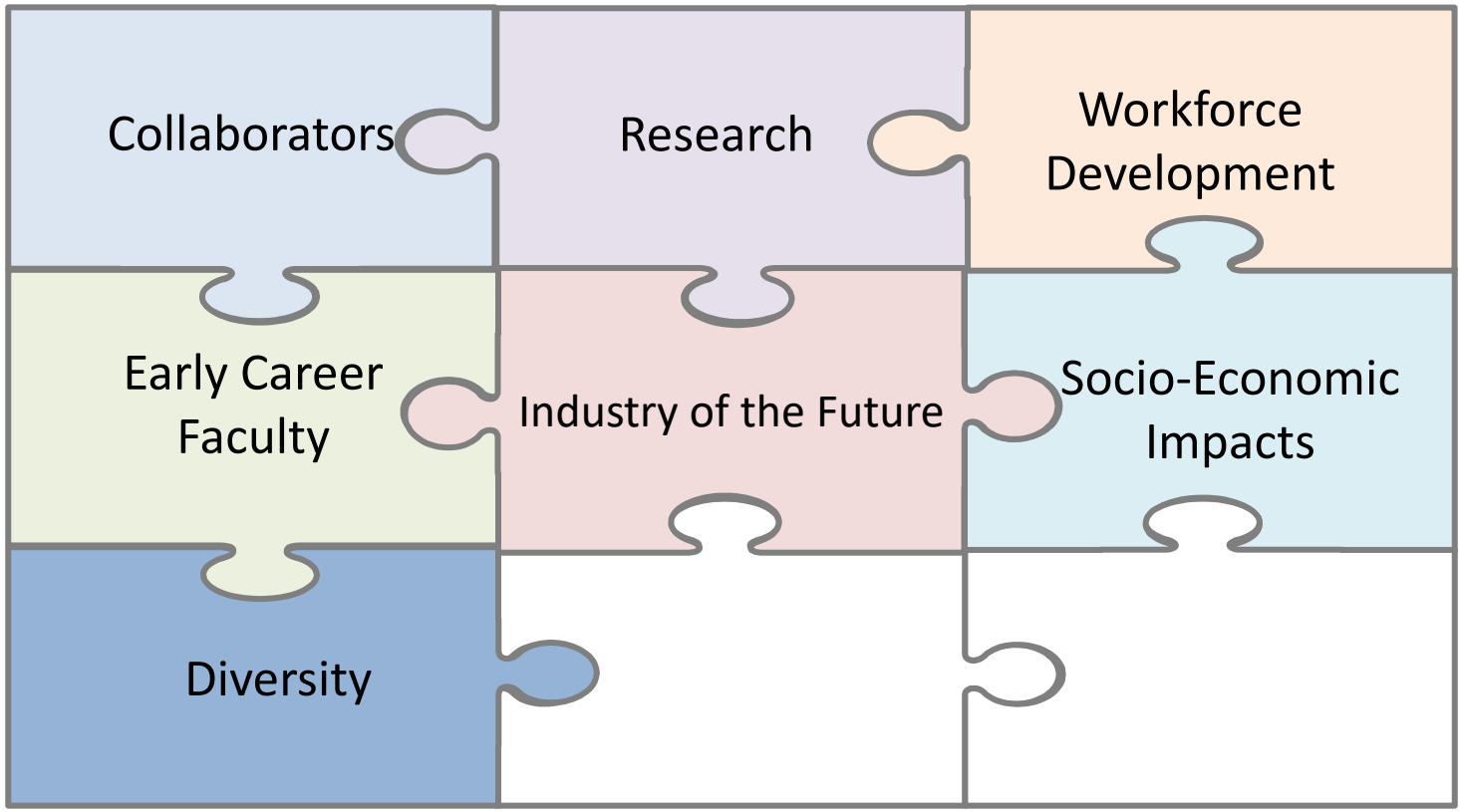
- Office of Technology Commercialization
  - https://otc.olemiss.edu/
  - Allyson Best, Director: amilhous@olemiss.edu

- Social Science Research Lab/ Public Policy Research Center
  - https://politicalscience.olemiss.edu/ssrl/
  - Can conduct economic impact studies
  - Director, Jon Wilburn: jwinburn@olemiss.edu

- William Nicholas, Director of Economic Development
  - https://olemiss.edu/people/williamn

## ?? What other UM Resources for ID'ing Track 2 Partners ??

# Diversity


Collaborators
Research
Workforce Development
Early Career Faculty
Industry of the Future
Socio-Economic Impacts
Diversity

# Diversity

- Diversity the future workforce for the chosen industry
  - "the hidden millions"
- Recruit, develop, mentor, and/or retrain **diverse early-career faculty** from underrepresented populations, and prepare them for future leadership roles.
- **Not just individual diversity** – also diversity of sectors, disciplines, geography, and institution types (2-year, 4-year, PUIs, HBCUs, etc.)

# Diversity

- Review Criterion: how effectively will diverse populations (women & underrepresented groups in STEM, persons w/ disabilities, economically disadvantaged, rural, and/or 1st-gen college students) and institutions (minority serving and 2-and 4-year) be engaged in research & ed. activities
  - *White Non-Hispanic males and Asian males are NOT underrepresented groups in STEM.*
- Annual reports must include numbers of women and members of other underrepresented groups in faculty & staff positions and as participants in funded activities

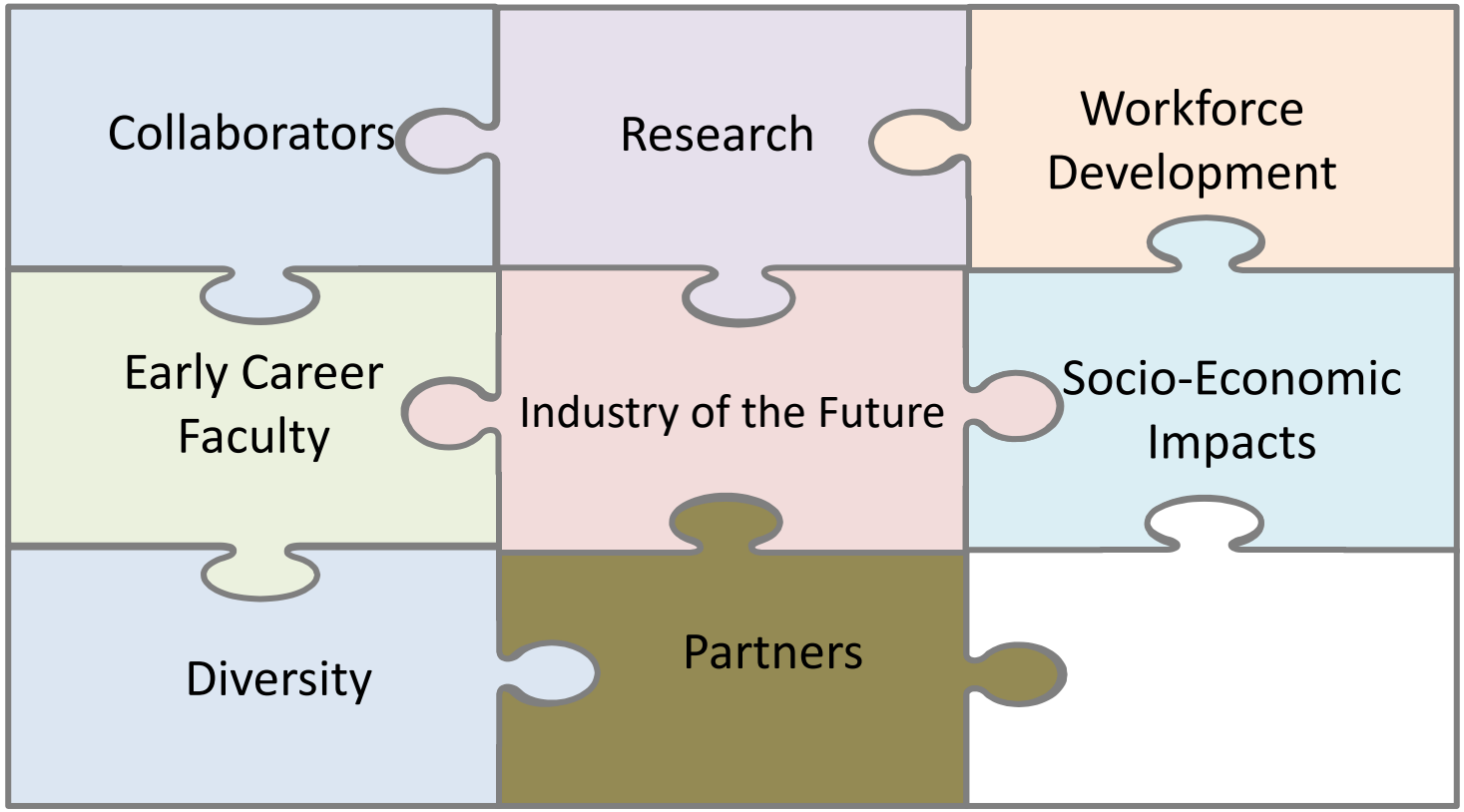
# Diversity

## UM Resources for Developing Diversity Plans

- Division of Diversity and Community Engagement
  - https://dce.olemiss.edu/
  - Shawnboda Mead, Interim Vice Chancellor: sdmead@olemiss.edu
  - JuWan Robinson, Project Manager: jrobins5@olemiss.edu
- Center for Inclusion and Cross Cultural Engagement
  - https://inclusion.olemiss.edu/
  - EJ Edney, Director: ej8@olemiss.edu
- Office of Inst. Research, Effectiveness, Planning (IREP)
  - Can provide institutional baseline diversity data (w/advance notice)
  - https://irep.olemiss.edu/
  - Data Inquiry Form: https://irep.olemiss.edu/data-inquiry-form/

**?? Who else at UM Can assist w/ Developing Diversity Plans ???**

# Partners


Collaborators
Research
Workforce Development
Early Career Faculty
Industry of the Future
Socio-Economic Impacts
Diversity
Partners

# Partners

- Partnerships with companies, innovation experts, or relevant local and State government and other stakeholders **expected** for proposal to have anticipated economic scale impact required for this solicitation.
- Involvement of 2- and 4-year colleges, Primarily Under-graduate Institutions & Minority Serving Institutions serving URMs in STEM **strongly recommended**.

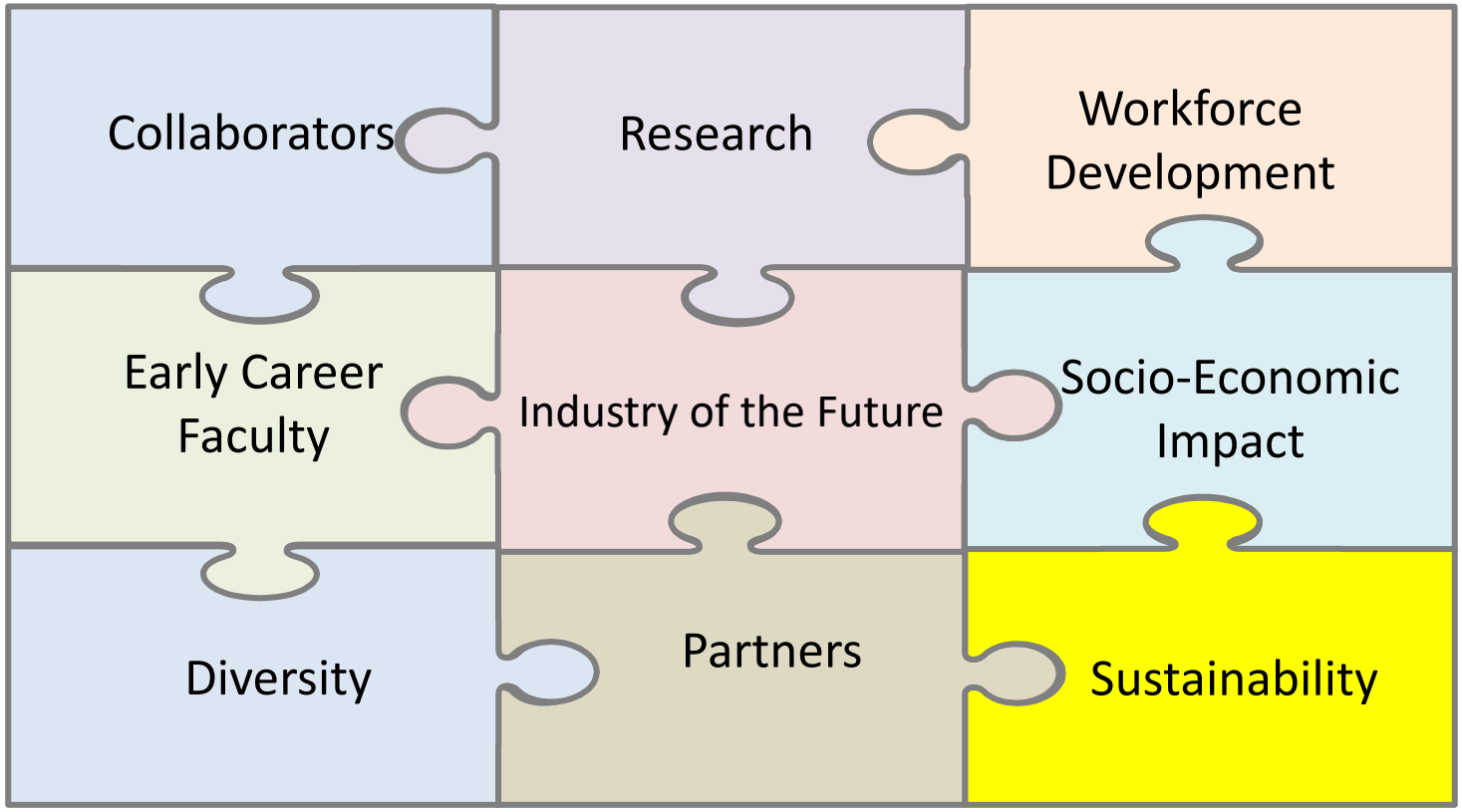
# Partners

## UM Resources for Identifying Partners

- Hughes Miller, Director if Industry Giving & Engagement
  - hughes@olemiss.edu
  - Can provide industry connections and speak to ways UM is engaged with industry in these areas
- Division of Diversity and Community Engagement
  - Cade Smith, Assistant VC for Community Engagement
    - cade@olemiss.edu
  - Anthony Siracusa, Director, Office of Community Engagement
    - acsiracu@olemiss.edu

## ?? What other UM Resources for ID'ing Track 2 Partners ??

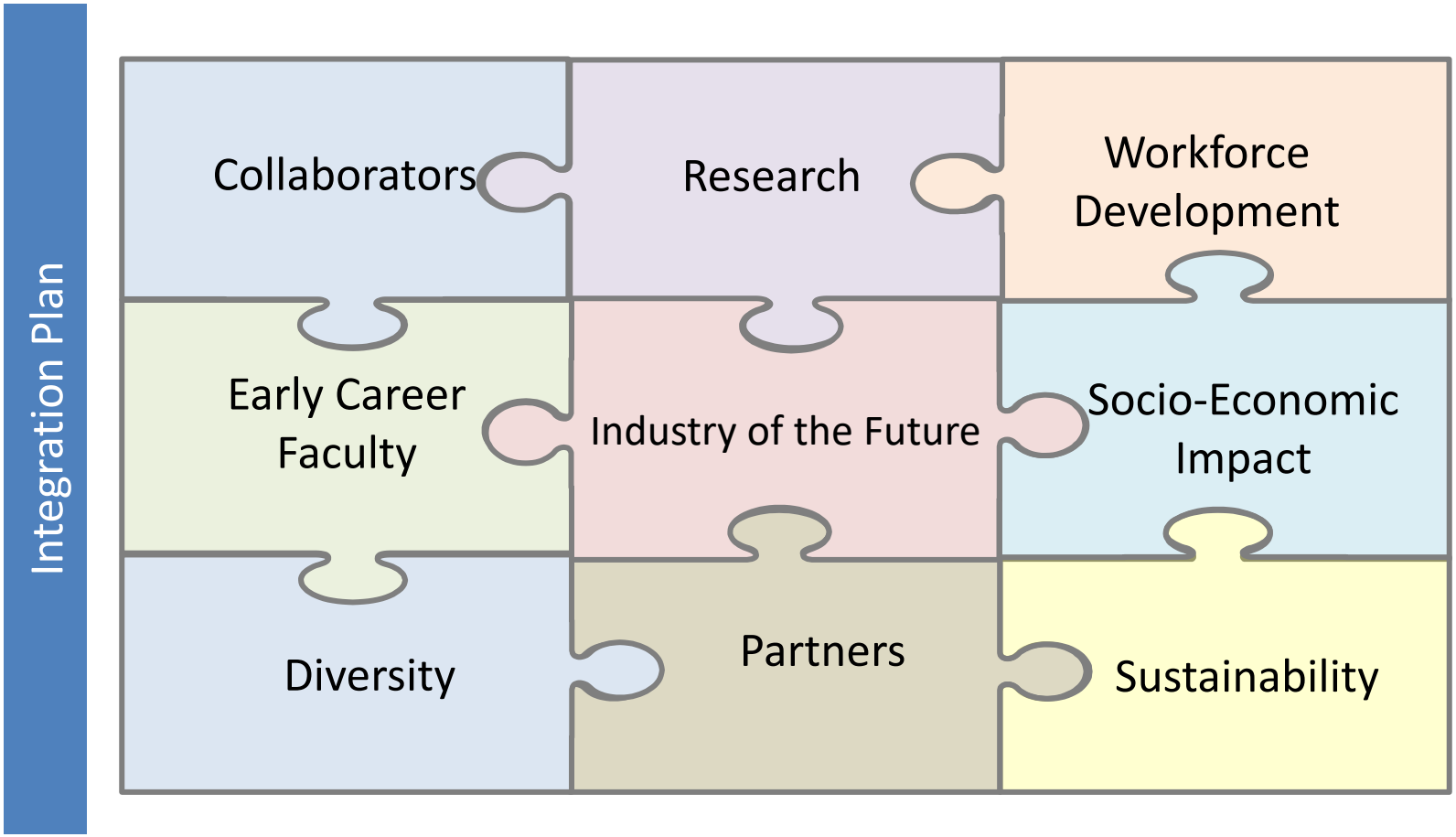
# Sustainability



# Sustainability

- projects are expected to create or establish a solid **pathway** towards impacting the jurisdictions at an **economic scale** guided by a diverse STEM workforce
- well-trained workforce should contribute to the industry in the jurisdiction(s) **beyond the scope of the award**
- What is the *potential* for the activities to be **sustained**
- How will new faculty hires be supported past the award ?
- Describe plan for long-term econ. impact and sustainability of activities, impacts, & achievements beyond the award (through industry partnerships?)
  - Including competitiveness for future federal and other awards

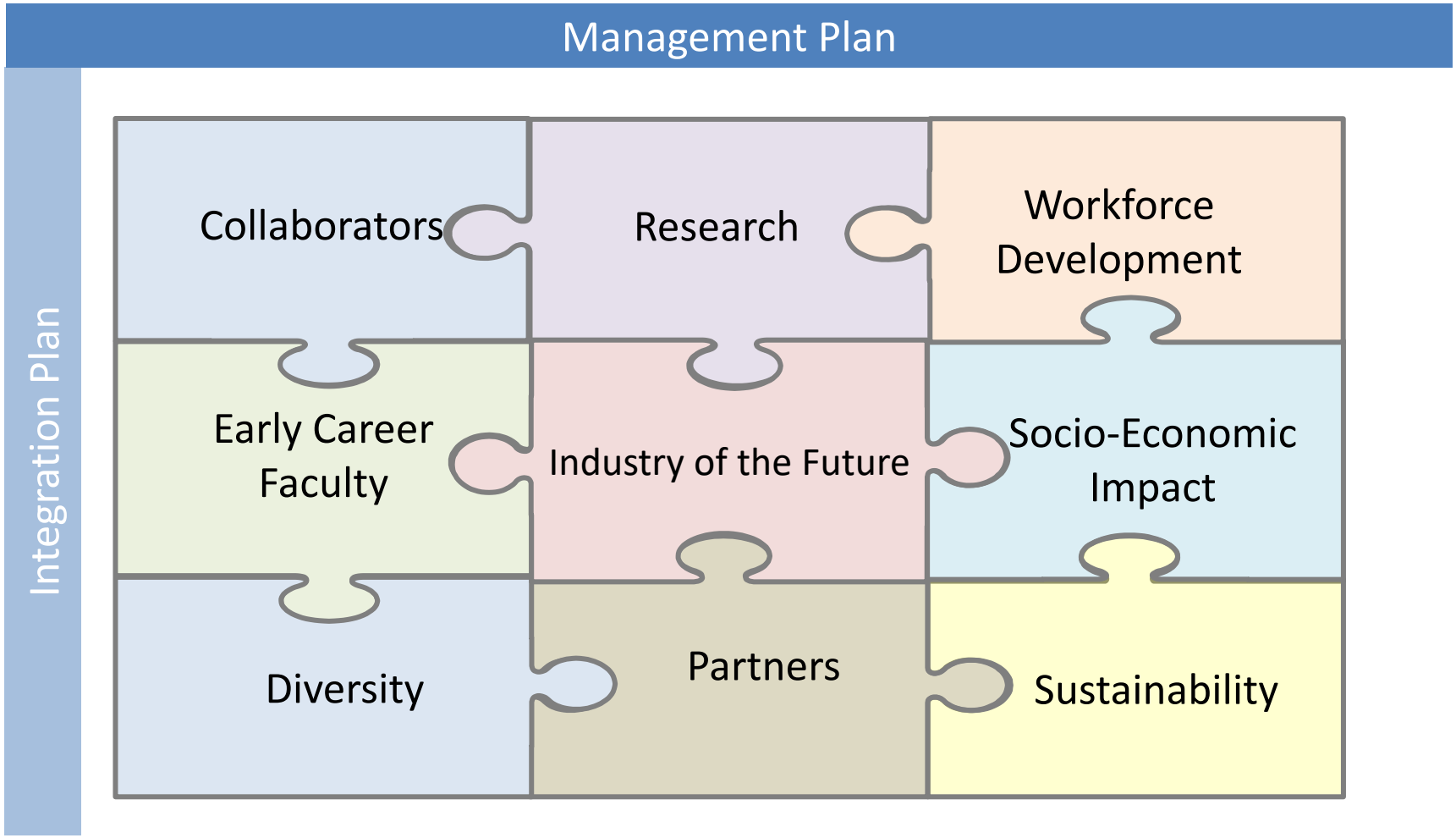
# Integration Plan



# Integration Plan

- Research, training, and education should be integrated (not standalone activities)
  - **Research** activities should feed into & reinforce **education** activities
  - **Education** activities should feed into & reinforce **research** activities
- Work across jurisdictions & institutions should be integrated & synchronized (not standalone projects)
- All should be integrated with the chosen industry

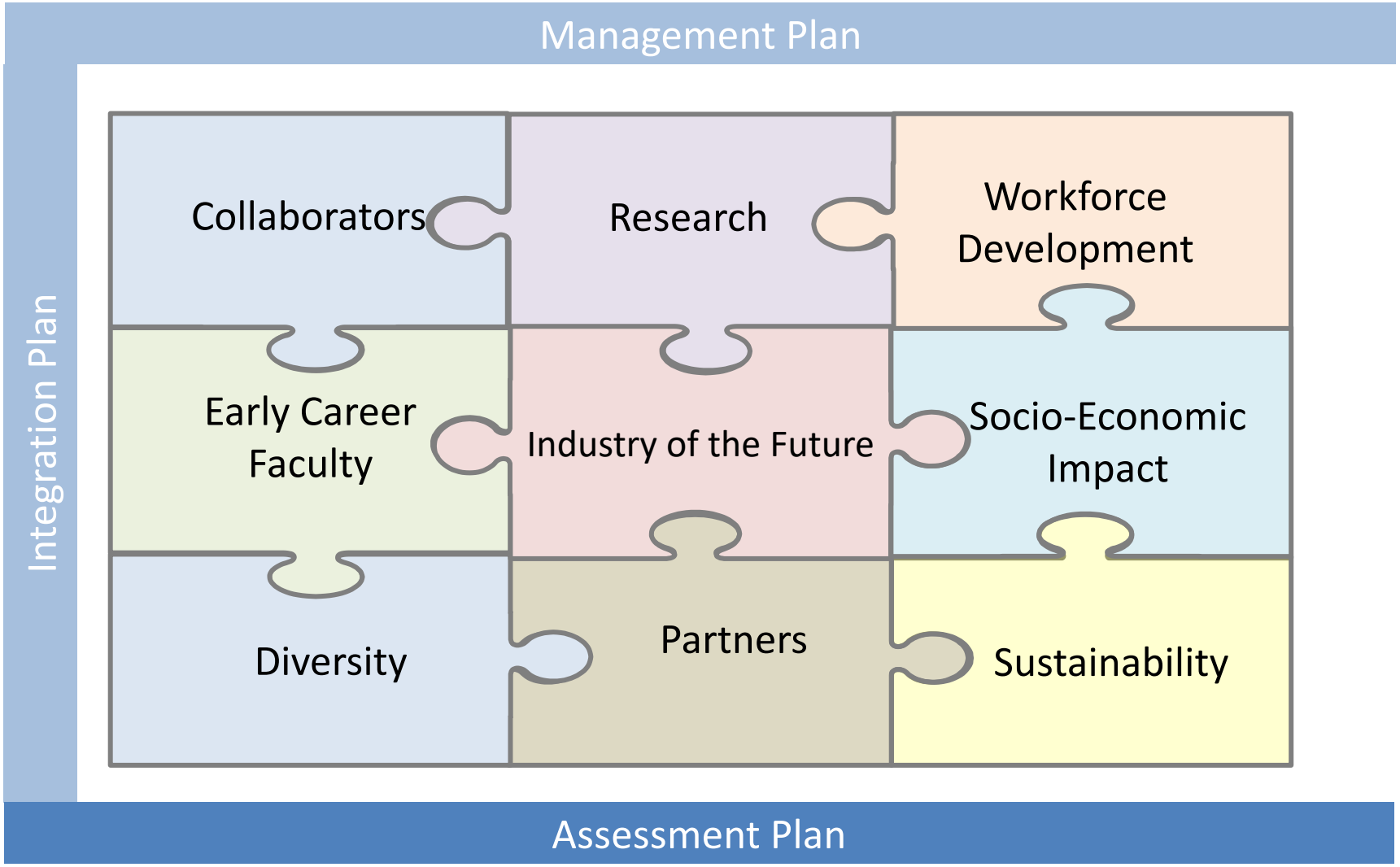
# Management Plan



# Management Plan

- Rationale for composition of the teams, a description of the leadership structure, &context for establishing the collaboration.
- Coordination and synergy among the collaborators should be summarized and the role of each of the faculty-level investigators should be clearly defined.
- Mechanisms that foster collaboration across the teams, such as all hands meetings, and risk-mitigation strategies.
- Compelling ways in the project leadership plans to coordinate the activities into a cohesive project should be presented, with well-articulated goals and strategies to achieve them.
- Including a justified part-time or full-time **administrative position** is encouraged *(There is a heavy reporting burden.)*

# Assessment Plan



# Eval & Assessment Plan

- You need to enlist/pay an independent evaluator
  - To aid in the identification of outcomes and impacts
  - To provide effective feedback to the management team
- Metrics for strength of collaboration & workforce development, collaborative publications, progression of early-career faculty, innovations, research results, longitudinal tracking of undergraduates, grad students, and postdocs, documenting collaborative efforts
- Provide realistic, annual metrics to assess long-term economic impacts of project

# Assessment Plan

- The annual and final reports must include identification of numbers of women and members of other underrepresented groups in faculty and staff positions and as participants in the activities funded by the award.

## Resources for Helping with Assessment Plan/Conduct

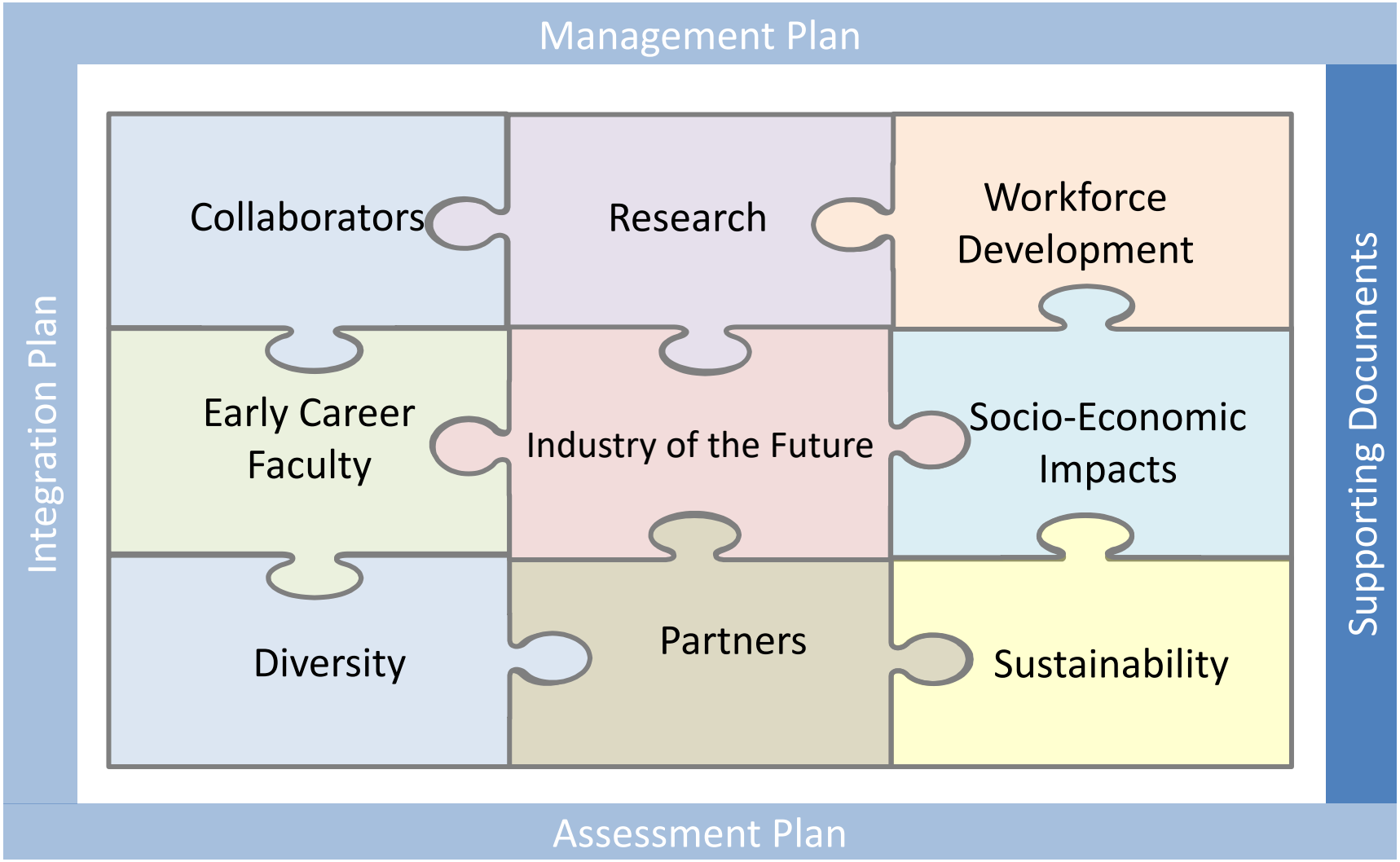
- The Center for Research Evaluation (CERE)
  - https://cere.olemiss.edu/
  - Sarah Mason, Director: https://olemiss.edu/people/masonsk
  - One Pager: https://cere.olemiss.edu/our-capabilities/
  - CERE is considered external/independent for purposes of these projects.
  - Engage CERE very early in the process!

# Assessment Plan (CERE)

CERE is also in the process of beta testing an online platform that should make it easier to track faculty productivity (specifically publications) and tie that work to specific research goals so people can assess progress towards those goals.

The system also pulls in altmetrics in order to look at wider impacts of research (e.g. in terms of news media, social media, etc.). It is called Productive Researcher.

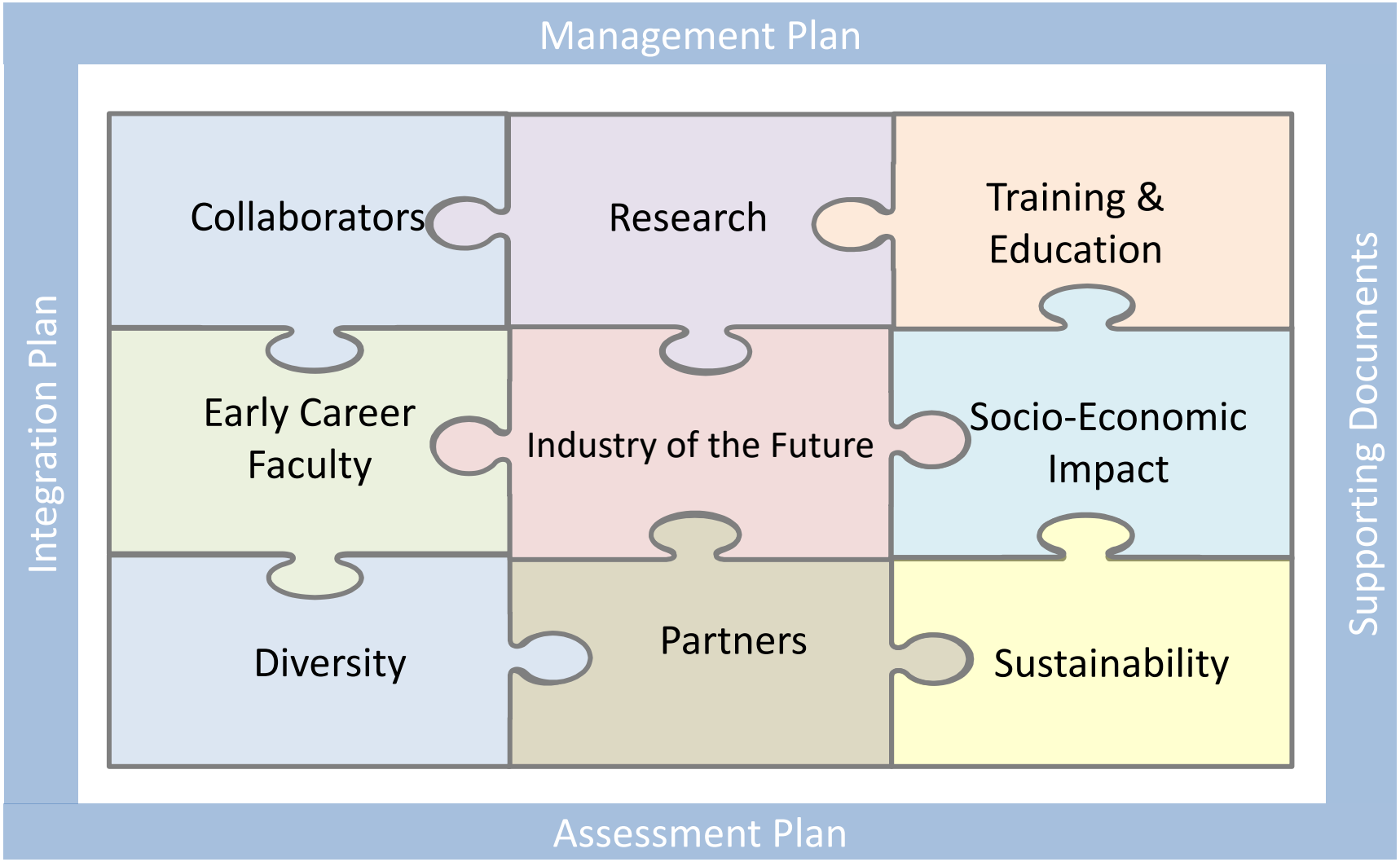
# Supporting Documents



# Supporting Documents

- Detailed budget and budget justifications
- Biographical sketches PIs, co-PIs, & senior personnel
- Collaborators and other Affiliations statements
- Current and Pending support
- Facilities, Equipment, and Other Resources
- Letters of Support
- Data Management Plan
- Postdoctoral Mentoring Plan
- Etc. (see solicitation and PAPPG)

# Puzzle Complete!



# UM (Oxford) Process

- NSF Solicitation Announcement: 10/23/20
- UM Today Announcement: 10/26/20
- ORSP Info Sessions: 11/2/20, 11/5/20
- NSF Webinars: 11/2, 11/4: https://www.nsf.gov/od/oia/programs/epscor/
- Networking Session: ~~11/9~~; 11/13/20
  - Sign up: https://research.olemiss.edu/upcoming-presentations
  - Format to be determined soon
    - 1-3 minute “pitches” via Zoom?
    - Virtual speed networking?
    - Virtual mingle?

# UM Process & Timeline

- Stage 1: Due 11/09/2020
  - Notice of Intent to Compete to LEad (NICLE)
    - Required but non-binding;
    - Abb. Proj. Summary (<=1p); Speculative Collaborators (<=1p)
  - Notice of Interest to Collaborate (optional, <= 1p)
- Stage 2: Pre-Proposal due 12/4/2020
  - Proj Summary (1p)
  - Abbreviated Proj. Description (<=6 pps)
  - Collaborators - confirmed but not hard committed (<=1p)
  - Anticipated Outcomes (<=1p)

# UM Process & Timeline

- ORSP will reach out to internal "winning" team by 12/10
  - Firm up commitment; which competition year preferred—2021 or 2022?
  - Runner-up team (if any) *may* be offered the other year's slot
- Submit LOI by 12/18/20 (for 2021 submission)
- Transmittal due 1/15/21;
- NSF due: 1/25/21
- 2022 Submission Team
  - Work on proposal through calendar year 2021
- Else: recompete for 2022 slot in spring/summer 2021

# Letter of Intent

- Submitted by ORSP -- NOT SEEN by REVIEWERS/PANELISTS
- NOT USED to JUDGE MERIT of PROPOSED RESEARCH
- Synopsis: 2,500 characters max
- Other Comments: 2,500 characters max
- Name participating EPSCoR Jurisdictions
- Anticipated PI (one)
- Research keywords
- Up to four other participating personnel (co-PIs from UM, other institutions) – this can be changed or deferred, but suggest nailing this now if possible.

# Proposing to NSF

- NSF PAPPG 20-1 – Proposal & Award Policies Procedure Guide: https://www.nsf.gov/pubs/policydocs/pappg20_1/index.jsp Part II: Proposal Preparation Instructions
  - II.C: Proposal Contents
    - II.C.2: Sections of the Proposal
- Specifics Solicitation overrides to PAPPG:
  - 20 page project description (rather than standard 15 for NSF)
    - Very Detailed instructions on what sections to include
  - No letters of Collaboration
  - Up to 5 letters of support

The PAPPG tells how to prepare an NSF proposal.

NSF Solicitations may have additional instructions that override PAPPG.

# Discussion and Questions?

- About the NSF solicitation?
- About the UM process?
- Resources available?

ORSP: Jason Hale: jghale@olemiss.edu (662) 259-0544

NSF: John-David Swanson: jswanson@nsf.gov (703) 292-2398